



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Olvi L. Mangasarian; Confirmation No. 5513  
Glenn M. Fung  
Serial No.: 10/650,121 Customer No.: 28863  
Filed: August 28, 2003 Group Art Unit: 2855  
Examiner: Unknown Docket No.: 1061-001US01  
Title: INPUT FEATURE AND KERNEL SELECTION FOR SUPPORT VECTOR  
MACHINE CLASSIFICATION

CERTIFICATE UNDER 37 CFR 1.8: I hereby certify that this correspondence is being deposited with the United States Post Service, as First Class Mail, in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 on

March 2, 2004

By:

Angela Watson

Name: Angela Watson

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
Alexandria, VA 22313-1450

Dear Sir:

Applicant submits the references listed on the attached form PTO-1449, copies of which are enclosed. This statement is being filed, to the best of Applicant's knowledge, before the receipt of a first Office Action on the merits.

Respectfully submitted,

Date:

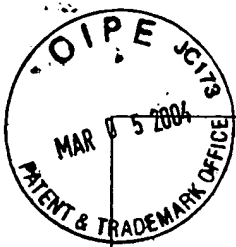
3-2-04

Shumaker & Sieffert, P.A.  
8425 Seasons Parkway, Suite 105  
St. Paul, Minnesota 55125  
Phone: (651) 735-1100  
Fax: (651) 735-1102

By: Steven J. Shumaker  
Reg. No. 36,275

<b>Form 1449*</b> <b>INFORMATION DISCLOSURE STATEMENT</b> <b>IN AN APPLICATION</b> (Use several sheets if necessary)		Docket Number: 1061-001US01		Application Number: 10/650,121	
		Applicant: Olvi L. Mangasarian and Glenn M. Fung			
		Filing Date: August 28, 2003		Group Art Unit: 2855	
		Examiner Name: Unknown			
<b>U.S. PATENT DOCUMENTS</b>					
<b>Examiner Initial</b>	<b>Document Number</b>	<b>Issue/Document Publication Date</b>	<b>Name</b>		<b>Filing Date If Appropriate</b>
	6,327,581	12/4/01	Platt		
	20020165854	11/7/02	Blayvas et al.		
	20030093393	5/15/03	Mangasarian et al.		
<b>FOREIGN PATENT DOCUMENTS</b>					
<b>Examiner Initial</b>	<b>Document Number</b>	<b>Publication Date</b>	<b>Country</b>	<b>Translation</b>	
				<b>Yes</b>	<b>No</b>
<b>OTHER DOCUMENTS (Including Authors, Title of Item, Page(s), Vol/Issue No., Publisher, Place of Publication)</b>					
	Barlogie, B., Cussens, J., Hardin, J., Page, D., Shaughnessy, J., Waddell, M., and Zhan, F., "Comparative data mining for microarrays: A case study based on multiple myeloma," Technical Report 1453, Computer Sciences Department, University of Wisconsin, Madison, November 2002.				
	Bradley, P. S., and Mangasarian, O. L., "Feature Selection via Concave Minimization and Support Vector Machines," Machine Learning Proceedings of the Fifteenth International Conference (ICML '98) pgs. 82-90, San Francisco, CA 1998.				
	Fung, G. and Mangasarian, O. L., "A Feature Selection Newton Method for Support Vector Machine Classification," Data Mining Institute Technical Report 02-03, pgs. 1-18, September 2002. Computational Optimization and Applications, to appear.				
	Fung, G. and Mangasarian, O. L., "Finite Newton Method for Lagrangian Support Vector Machine Classification," Data Mining Institute Technical Report 02-03, pgs. 1-22, September 2002. Computational Optimization and Applications, to appear.				
	Golub, G. H. and Van Loan, C. F., "Matrix computations," The John Hopkins University Press, Baltimore, Maryland, 3 <sup>rd</sup> edition, pgs. 48-86, 1996.				
	Lee Y. J. and Mangasarian, O. L., "RSVM: Reduced Support Vector Machines," Data Mining Institute Technical Report 00-07, Computer Sciences Department, University of Wisconsin, Madison, Wisconsin, pgs. 1-17, July 2000.				
	Mangasarian, O. L., "Generalized Support Vector Machines," in Advances in Large Margin Classifiers, MIT Press, Cambridge, Massachusetts, Bartlett, P., Scholkopf, B., Schuurmans, D., and Smola, A., editors, pages 135-146, 2000.				

	Mangasarian, O. L., "Parallel Gradient Distribution in Unconstrained Optimization," SIAM Journal on Control and Optimization, 33(6):1916-1925, 1995.
	Mangasarian, O. L. and Musicant, D. R., "Lagrangian Support Vector Machine," Journal of Machine Learning Research, 1:161-177, 2001.
	Odewahn, E. Stockwell, R. Pennington, R. Humphreys, and W. Zumach, "Automated Star/Galaxy Discrimination with Neural Networks," Astronomical Journal, 103(1): 318-331, 1992.
	Burges, Christopher J.C., "A Tutorial on Support Vector Machines for Pattern Recognition," Data Mining and Knowledge Discovery, vol. 2, no. 2, pgs. 121-167, 1998.
	Fung, Glen, Mangasarian, Olvi L., "Data Selection for Support Vector Machines Classifiers," Data Mining Institute Report 00-02, 7 pgs., February 2000.
	Trotter, Matthew, "Support Vector Machines for QSAR Analysis," Department of Computer Science, University of College London, 25 pgs., undated.
	F. Facchinei, Minimization of $SC^1$ functions and the Maratos effect. Operations Research Letters, 17:131-137, 1995.
	J.B. Hiriart-Urruty, J.J. Strodiot, and V.H. Nguyen, Generalized hessian matrix and second-order optimality conditions for problems with $C^{1,1}$ data, Applied Mathematics and Optimization, 11:43-56, 1984.
	CPLEX, <a href="http://www.llog.com/products/cplex">http://www.llog.com/products/cplex</a> , 1 page (last printed February 10, 2004).
	S. Lucidi, A new result in the theory and computation of the least-norm solution of a linear program, Journal of Optimization Theory and Applications, 55:103-117, 1987.
	O.L. Mangasarian, Normal solutions of linear programs, Mathematical Programming Study, 22:206-216, 1984.
	O.L. Mangasarian, Arbitrary-norm separating plane, Operations Research Letters, 24:15-23, 1999.
	O.L. Mangasarian, A finite Newton method for classification problems, Technical Report 01-11, Data Mining Institute, Computer Sciences Department, University of Wisconsin, pgs. 1-17, December 2001.
	O.L. Mangasarian and R.R. Meyer, Nonlinear perturbation of linear programs, SIAM Journal on Control and Optimization, 17(6):745-752, November 1979.
	O.L. Mangasarian, A Newton Method for Linear Programming, Powerpoint Presentation, Mathematics Department, University of California at San Diego, 21 pgs., July 26, 2002.



O.L. Mangasarian, A Newton Method for Linear Programming, Technical Report 02-02, Data Mining Institute, Computer Sciences Department, University of Wisconsin, pgs. 1-20, March 2002. Revised December 2002.

**EXAMINER**

**Date Considered**

**\*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.**

Based on Form PTO-FB-A820  
(Also form PTO-1449)

Patent and Trademark Office, U.S. Department of Commerce